Kubernetes Lab 2

1) How many Namespaces exist on the system?

```
controlplane $ kubectl get namespace
NAME                 STATUS   AGE
default              Active   27d
kube-node-lease      Active   27d
kube-public          Active   27d
kube-system          Active   27d
controlplane $
```

2) How many pods exist in the kube-system namespace?

```
controlplane $ kubectl get po -n kube-system
NAME                                   READY   STATUS    RESTARTS   AGE
calico-kube-controllers-5f94594857-zsh2v   1/1     Running   2          28d
canal-2fwlc                            2/2     Running   0          3m27s
canal-j9x66                            2/2     Running   0          3m27s
coredns-68dc769db8-drf8h               1/1     Running   0          28d
coredns-68dc769db8-sbbx7               1/1     Running   0          28d
etcd-controlplane                      1/1     Running   0          28d
kube-apiserver-controlplane            1/1     Running   1          28d
kube-controller-manager-controlplane   1/1     Running   1          28d
kube-proxy-xnz4r                       1/1     Running   0          28d
kube-proxy-zbxrb                       1/1     Running   0          28d
kube-scheduler-controlplane            1/1     Running   2          28d
controlplane $
```

3) Create a Deployment with name= deployment-1 / image= busybox / replicas= 3

```
controlplane $ vim deployment.yaml
controlplane $ kubectl apply -f deployment.yaml
deployment.apps/deployment-1 created
```

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```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: deployment-1
  labels:
    app: busybox
spec:
  replicas: 3
  selector:
    matchLabels:
      app: busybox
  template:
    metadata:
      labels:
        app: busybox
    spec:
      containers:
      - name: busybox
        image: busybox
        ports:
        - containerPort: 80
        tty: true
```

4) How many Deployments and ReplicaSets exist on the system now?

```
controlplane $ kubectl get deploy
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment-1   3/3     3            3           8m13s
controlplane $ kubectl get rs
NAME                      DESIRED   CURRENT   READY   AGE
deployment-1-7cd7c9fd8f   3         3         3       8m15s
controlplane $
```

5) How many pods are ready with the deployment-1?

```
controlplane $ kubectl get pods
NAME                            READY   STATUS    RESTARTS   AGE
deployment-1-7cd7c9fd8f-5crtr   1/1     Running   0          8m39s
deployment-1-7cd7c9fd8f-6255f   1/1     Running   0          8m39s
deployment-1-7cd7c9fd8f-9zj4s   1/1     Running   0          8m39s
controlplane $
```

6) Update deployment-1 image to nginx then check the ready pods again

```
Editor   Tab 1   +
controlplane $ kubectl set image deployment/deployment-1 busybox=nginx
deployment.apps/deployment-1 image updated
controlplane $ kubectl get pods
#NAME                            READY   STATUS        RESTARTS   AGE
deployment-1-6d7c8db96c-p5dhb    1/1     Running       0          12s
deployment-1-6d7c8db96c-qfl4z    1/1     Running       0          11s
deployment-1-6d7c8db96c-s97cs    1/1     Running       0          13s
deployment-1-7cd7c9fd8f-7c42p    1/1     Terminating   0          2m53s
deployment-1-7cd7c9fd8f-8bzhf    1/1     Terminating   0          2m53s
deployment-1-7cd7c9fd8f-dzc7b    1/1     Terminating   0          2m53s
controlplane $ #
```

7) Run kubectl describe deployment deployment-1 and check events

```
Selector:               app=busybox
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=busybox
  Containers:
   busybox:
    Image:        nginx
    Port:         80/TCP
    Host Port:    0/TCP
    Environment:  <none>
    Mounts:       <none>
  Volumes:        <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
  Available      True    MinimumReplicasAvailable
  Progressing    True    NewReplicaSetAvailable
OldReplicaSets:  <none>
NewReplicaSet:   deployment-1-6d7c8db96c (3/3 replicas created)
Events:
  Type    Reason             Age    From                   Message
  ----    ------             ----   ----                   -------
  Normal  ScalingReplicaSet  4m35s  deployment-controller  Scaled up replica set deployment-1-7cd7c9fd8f to 3
  Normal  ScalingReplicaSet  115s   deployment-controller  Scaled up replica set deployment-1-6d7c8db96c to 1
  Normal  ScalingReplicaSet  114s   deployment-controller  Scaled down replica set deployment-1-7cd7c9fd8f to 2 from 3
  Normal  ScalingReplicaSet  114s   deployment-controller  Scaled up replica set deployment-1-6d7c8db96c to 2 from 1
  Normal  ScalingReplicaSet  113s   deployment-controller  Scaled down replica set deployment-1-7cd7c9fd8f to 1 from 2
  Normal  ScalingReplicaSet  113s   deployment-controller  Scaled up replica set deployment-1-6d7c8db96c to 3 from 2
  Normal  ScalingReplicaSet  111s   deployment-controller  Scaled down replica set deployment-1-7cd7c9fd8f to 0 from 1
controlplane $
```

8) Rollback the deployment-1

```
controlplane $ kubectl rollout undo deployment/deployment-1
deployment.apps/deployment-1 rolled back
```

9) What is the used image with the deployment-1?

```
controlplane $ kubectl describe deploy deployment-1
Name:                   deployment-1
Namespace:              default
CreationTimestamp:      Fri, 20 Jan 2023 11:29:40 +0000
Labels:                 app=busybox
Annotations:            deployment.kubernetes.io/revision: 3
Selector:               app=busybox
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=busybox
  Containers:
   busybox:
    Image:        busybox
    Port:         80/TCP
    Host Port:    0/TCP
    Environment:  <none>
    Mounts:       <none>
  Volumes:        <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
  Available      True    MinimumReplicasAvailable
  Progressing    True    NewReplicaSetAvailable
OldReplicaSets:  <none>
NewReplicaSet:   deployment-1-7cd7c9fd8f (3/3 replicas created)
Events:
```

10) Create a deployment with

Name: dev-deploy

Image: redis

Replicas: 2

Namespace: dev

Resources Requests:

CPU: .5 vcpu

Mem: 1G

Resources Limits:

CPU: 1 vcpu

Mem: 2G

```yaml
apiVersion: v1
kind: Namespace
metadata:
  name: dev
  labels:
    name: dev
```

```
controlplane $ kubectl apply -f ns.yml
namespace/dev created
```

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: dev-deploy
  labels:
    app: redis
spec:
  replicas: 2
  selector:
    matchLabels:
      app: redis
  template:
    metadata:
      namespace: dev
      labels:
        app: redis
    spec:
      containers:
      - name: redis
        image: redis
        resources:
          requests:
            memory: "1Gi"
            cpu: "1"
          limits:
            memory: "2Gi"
            cpu: "5"
```

```
controlplane $ vim dev-deploy.yml
controlplane $ kubectl apply -f dev-deploy.yml
deployment.apps/dev-deploy created
```

```
controlplane $ kubectl get namespaces
NAME              STATUS   AGE
default           Active   28d
dev               Active   13s
kube-node-lease   Active   28d
kube-public       Active   28d
kube-system       Active   28d
controlplane $
```